

IV. REMARKS

Claims 13 and 18 have been amended as requested. It is therefore submitted that they are no longer objectionable.

The present invention as claimed in the claims 13-22 includes a hole (as shown in Figs. 3, 4, 7 and 8) formed on the case (numerals 1 and 7 in the Figs.) for communicating with outside thereof to expose a part of the base member (numerals 4 and 6 in the Figs.) of the case to the outside thereof, and a thermal type adhesive member (solder, etc.) having conductivity and disposed between the base member and the holding member (numerals 3 and 10 in the Figs.) carrying the semiconductor laser element (numerals 2 and 8 in the Figs.).

The Examiner has asserted that Kitamura's Fig. 22 teaches the hole opposite to the holding member (23) and also a semiconductor laser assembly comprising a case (20) with a base member (20) fixedly connected in the hole by bolts (32), wherein a side of the base (20) is exposed to the outside of the case.

It is respectfully submitted that the Examiner's assertion is incorrect. Kitamura's laser device of Fig. 22 is illustrated in perspective in Fig. 23. As be apparent from Figs. 22 and 23, the laser device of Fig. 22 is a resin molded type device. There is no hole in the sealing resin layer or case 11 as presently claimed. With the sealing resin layer 11 only the laser diode element 1 and the photo diode 23 are entirely covered. The lead frames 20 are partially covered with the sealing resin layer 11 to project from three sides of the case. Fig. 22 merely illustrates a mode to fix the laser device onto the fixing board 35. The lead fram 20 is bonded to the fixing boards 35 by adhesive 33 on the uncovered surface 20b so as to

bridge the fixing boards. Namely, the lead frame 20 corresponds to the base member 4 and 6 of the invention, the photo diode 23 to the spacer 3 and 10 (i.e., holding member) of the invention, and the sealing resin layer 11 to the case 1 of the invention. Accordingly Kitamura et al. is irrelevant as a cited reference.

In addition, it is unclear as to whether Kitamura's adhesive 33 is a thermal type or not. Since there is no disclosure to harden or cure the adhesive 33, it must be assured that Kitamura et al. does not teach the thermal type adhesive member.

As discussed in the previous response, Tanaka et al. does not disclose any hole formed on the case for communicating with outside to expose a part of the substrate member (9) of the case (23), i.e., the protective cover to the outside thereof. Although through bores (9D) are formed in the substrate (9), they do not correspond to any hole formed for communicating with outside. This is because the through bores formed in the substrate (9D) are caulked or staked with the protrusions integrally formed with the protective cover (23) for fixing it (see column 5 lines 9-15). A plurality of spots P along the peripheral edge of the contact area between the substrate (9) and the unit fixing surface (20a) are simultaneously welded by laser light as shown in Figs. 4 and 5 (see column 6 lines 5-10). No irradiation through such bores is performed in the Tanaka et al. device.

Tanaka et al. also do not show any thermal adhesive as recognized by the Examiner. Therefore, Tanaka et al. merely shows a conventional semiconductor module.

Nakanishi et al. does not disclose any hole formed on the case for communicating with outside to expose a part of a silicon

substrate (41) mounted on a protective plate (48). Nakanishi et al. merely discloses that a semiconductor laser device shown in Figs. 4A and 4B comprises a semiconductor laser chip 40, the silicon substrate 41, a resin-made frame body 42, external leads 43a, 43b, 43c, the protective plate 48, etc. (see column 4 lines 50-67).

Nakanishi et al. teaches that "the cooling plate 76 (77) is mounted on the frame 82 of large thermal capacity or other cooling means not shown in the drawing (for example, Peltier element, cooling fin), by screwing, soldering or high heat conductive adhesive, so that the heat from the semiconductor laser chip is released "efficiently" (see column 10 lines 30-35). However, it is not apparent from such description to suggest the use of a thermal adhesive to mount the semiconductor laser device 80, i.e., semiconductor module onto a heat sink. This is not any mounting method of a semiconductor laser element in a case of the module. This is because Nakanishi et al. does not show the method for performing the soldering or high heat conductive adhesive in order to mount the cooling plate 76 (77) on the frame 82, in column 10 lines 30-35.

It is therefore impossible to use a thermal adhesive which not shown in Tanaka et al., as taught by Nakanishi et al. It is not obvious to one of ordinary skill in the art to use a case without hole in Tanaka et al., as taught by Kitamura et al.

Claims 13 and 18 recite the hole in a case exposing a part of the base to the outside of the case and a meltable when irradiated thermal adhesive member having thermal conductivity disposed between the holding member and the base member. This is not shown in the references even when taken in combination.

Thus the rejection of claims 13-22 under 35 USC 103 should be withdrawn.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested, or at least an entry for appeal purposes as the claims are in better form for an appeal. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for a one month extension of time and any other fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

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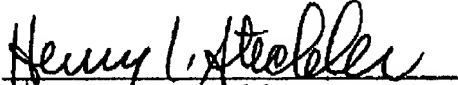
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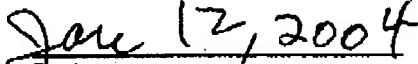
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